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N. A. C. A. BULLETIN

Vol. XVIX, No. 6 November 15, 1937

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This Bulletin is published semi-monthly by the National Association of Cost Accountants, 385 Madison Avenue, New York. Subscription price, $10.00 per year. Entered at the Post Office, New York, N. Y., as second-class matter August 28, 1925, under the Act of March 3, 1879.

EDITORIAL DEPARTMENT NOTE

Standard costs, or "Cost Standards," if you prefer, have been treated at great length in N. A. C. A. publications, yet a reading of the two articles in this issue of the Bulletin will convince you, we believe, that the subject is not threadbare but a matter of considerable present interest to any accountant who is endeavoring to give his company the most help possible in the solving of present-day problems. Mr. Crockett's article should give you a new perspective with regard to the value and objectives of standard costs; Mr. Myers' contribution will prove most valuable in setting standards and budgeting expenses for various volumes. Together they make a worthwhile contribution to the literature on the subject.

Horace G. Crockett, the author of our first article, was born in Maine and educated in the public schools of Massachusetts. He had the usual variety of jobs and experiences in various industries, such as open hearth and crucible steel foundries, contracting, turpentine distillery, tires and mechanical rubber goods, stationery and automobiles. The most important experience in this group was seven years with the Franklin Automobile Co. Joining the staff of Scovell, Wellington & Co., accountants, auditors and industrial engineers, on January 1, 1916, he became a partner in 1922. In November, 1935 the firm of McKinsey, Wellington & Co., industrial engineers, was formed to take over the management engineering practice of Scovell, Wellington & Co., and James O. McKinsey & Co., leaving the former firm as accountants and auditors. He is now a partner in both firms, devoting the major portion of his time to the activities of McKinsey, Wellington & Co. Mr. Crockett joined the New York Chapter in 1920 and served as President of the Chapter for 1923-24. He also served on the National Board of Directors for three years. He was the second President of the Spot Club for the year ending June, 1936.

Herbert J. Myers, author of our second article, is a member of the Chicago Chapter and is the author of the article "How to Set Standards" which was awarded first prize in the Jordan Prize Essay Contest in 1931. Mr. Myers was born in Wisconsin. He entered the service of the Government in Washington in 1919. Later he was Factory Accountant for six and one-half years for Lyon and Healy, after which he became Controller of the United States Radio and Television Corp. After four and one-half years he became Chief Accountant for the General Household Utilities Co. with which the United States Radio and Television Corp. was merged. Mr. Myers is now Cost Accountant for the United States Gypsum Co. with headquarters in Chicago.

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NOVEMBER 15, 1937

COST STANDARDS AND BUDGETS

By Horace G. Crockett, Partner, McKinsey, Wellington & Co., New York, N. Y.

I THOUGHT that everything had been said about standard costs that could be said, and I do not know that I can add anything new. I have always marveled at the continued vitality of the National Association of Cost Accountants and the ability that it has to hold the interest of its members. While we discuss many allied problems in our chapter meetings, it still holds, I believe, that the real interest of this Association and its members centers around cost accounting. That fact gives me hope that I may be able to suggest a few new thoughts, or new applications of old principles which will hold your attention and challenge your thoughts.

"Cost Standards" Preferred to "Standard Costs"

In spite of the activities of this Association, I know that much still needs to be done in the industries of this country in the way of good cost accounting. There are still a great many companies that have only the crudest kind of a cost system and very few that have what I think most of us in this group would call a real system of cost standards, or one which is as much of an aid to operating executives as it should be. As a matter of fact, there are many cost accountants who have not yet fully accepted the principles of cost standards.

You will note that I have twice spoken of a plan of "Cost Standards," not a standard cost plan. I have never liked the term "Standard Costs" and do not think it is correct terminology. If you will think about it for a while, I believe you will agree with me that the term "Plan of Cost Standards" more accurately expresses our thoughts. It is even possible that thinking of the procedure in these terms will clarify our thinking on the whole subject.

Value of Measuring Performance

I think everyone will agree as to the value and desirability of having a measure or of setting standards for every activity and

function of a business. Performances should be measured if we are to judge them fairly and determine where improvements are needed. That measuring stick, or standard, should be established as accurately as possible with recognition of all the factors.

Let us think, then, of a plan of setting up standards for all activities and departments of a business, and also, of perhaps greater importance, of setting up a procedure so that we can intelligently compare actual performance with those standards.

Setting up the standards for the cost of products and for all manufacturing operations and functions is undoubtedly one of the biggest problems we have but probably, at the same time, one of the easiest because products and manufacturing operations do lend themselves to an analysis which makes the establishment of such standards quite a simple matter.

Cost Accountant Must Sell Self First

Up to this point, I do not believe there can be or has been any difference of opinion. It is only when we suggest running these standards through the books so that the accounts show up all of the variances and give us the complete story, and particularly when we recommend that inventories be valued at these standards, that we encounter real opposition. Nowhere else that I recall, do we run afoul of what we may call accounting principles.

To what extent the dearth of really good cost accounting is due to the fact that you cost accountants yourselves are not thoroughly sold on the principles of cost standards, and to what extent on your inability to sell them to your management, I do not know. Certain it is that you must be sold on them yourself if you are going to convince the management. If I can make a few suggestions to you that will be helpful, I will be well repaid.

Costs for Statement Purposes vs. Costs for Operating Control

I am afraid that many of us still think of cost accounting more as something that is necessary in the preparation of the financial statements of the company rather than something that should be of everyday necessity and value to the operating executives. There is still a wide gap between cost accountants and operating men, and the figures are not used to control operations and costs to

anything like the extent that they should be. Perhaps that again is due to the fact that the cost accountant thinks of himself as more directly connected with the accounting department and accounting functions than with the operating department. If you think so, then the operating people are going to accept you at that valuation.

You have heard so many times that it must be tiresome to you, that the cost accountant ought to get out into the factory and learn all about the manufacturing operations so that he can deal with them in a manner that is intelligent and helpful to the operating executives. The fact remains, however, that of my own knowledge I could tell you of many companies where factory managers and superintendents and foremen are either quite without cost information or else are compiling such data as they can on the side from such records as they can obtain, because the cost procedure established in their companies seems to be primarily for the purpose of feeding the financial records and not for giving them the data which they need for controlling operations.

Cost System Should Be Tied In

I used to think that if good standards were available and there was adequate machinery for collecting cost data, it did not make much difference whether the system was tied in with the general books or not. I have long since come to the conclusion that a cost system or any plan of standards falls far short of its potential value to the company if it is not an integral part of the general books. (You may think this sounds like a contradiction when I have just said that I though that many cost accountants were placing too much emphasis on the accounting rather than the operating side. My objection is that so many cost accountants seem to feel that if they have produced figures which will indicate the value of inventories and the cost of sales for the financial records, that is sufficient.)

If you have no particular quarrel with the principle of valuing inventories at standard, or are begging the question because you think that it does not make much difference anyway, and you get just as much good out of comparing with the standards outside of the books, I can only say that you are mistaken.

It is only when standards are tied in with the books that you can be sure that you have the complete and accurate story. It

is the only effective way that the important facts are going to be impressed upon the executives, and the only way they can get a picture of the effect on profits of all deviations from standards.

Inventories at "Actual" or "Standard"?

Certainly there is no more work involved in a cost system tied in with the books than one which is not tied in, providing the system is producing all of the essential cost data, and that is the only way everybody can be satisfied that everything is accounted for somewhere. It follows, therefore, that the objection to a system which uses cost standards as an integral part of a system which is tied in with the books is the fact that so many of our accountants tell us that inventories must be stated at the so-called actual cost. I have never been able to understand that position. In the first place, these same accountants who hold up their hands in horror at any thought that an inventory should be stated at any other figure than an amount which includes all expenditures for the period, are naturally and usually conservative; and yet standard costs will almost always be less than so-called actual costs.

Inventories should be valued and carried at what I would call "true costs," and "true costs" are obtained only after the elimination of variations due to changes in volume of activity, and to other irregularities and accidents.

Examples of "True Costs"

If you pay operators 50 cents each to make a certain article or perform a certain operation, 50 cents becomes the standard labor cost, and may be the actual labor cost for the majority of the employees in the department over a considerable period of time. If, through some accident or emergency, you engage an inexperienced operator, or transfer someone from another department at a much higher wage so that you have to pay 75 cents, I cannot make myself feel that that extra 25 cents is any part of the true cost of that article or operation. You have a loss. Why not take it immediately and in a manner which gives you some information and control. As a practical matter, we know that in any factory or department there is always a certain amount of such employment of inexperienced people or "transfers." In other

words, this becomes the standard or normal condition, and the cost standard should reflect that situation. That, however, is quite different from charging into inventory every penny of expenditure that produced this so-called actual cost.

During the past several years, there have been many instances of companies who had idle plants and who have been operating at a very low production volume. I know that those companies have carried this idle plant expense as a separate profit and loss item. Also, I am certain that no intelligent person would think of valuing the inventories of those companies at the so-called actual costs, based on their actual expenditures for the low volume of production. The cost of producing the first unit of a new line would undoubtedly be excessive, and you would not carry it at this value in the inventory. If then we accept the principle in these more or less extreme cases, why do we still object to going the whole way, determining standards for materials, for labor and for overhead, and then carry those standards through the books of accounts, valuing inventories and cost of sales on that basis, charging all of the variances directly to profit and loss?

Standards for Material and Labor as Well as for Burden

Most companies accept the principle of normal or standard burden rates, but I know many companies who go that far, and yet seem to hesitate at using standards for material and labor, and permitting variances on those cost items be thrown out as they do burden variances. Somehow they seem to feel that because material and direct labor can be identified to a particular product, that product must take all of the material and all of the labor that may be used during the period to produce a certain volume of finished product. At least, I can think of no other sound reason for accepting the principle for burden standards and not for material and labor as so many companies do.

Now let us consider for a moment, some of the details connected with establishing and operating cost standards.

Standards for the Special Order Plant

Probably everyone here will agree with me that if you make only a comparatively few different kinds of products, the so-called standard cost system applies very readily. In fact, I think many

have felt that it was only under such conditions that standard costs did apply; that where you had a plant with a great variety of products, or where each order was in effect a special order, the principles of standard costs did not apply, or at least nothing was to be gained from their usage. If we think of a plan of applying cost standards in such cases as the latter, I believe the problem will become clearer in our mind and we will realize the advantages to be gained.

In the plant with a few products, you obtain the actual cost of the month's production of each of these products in each of the several departments or operations to compare with the standard. In the plant where every order is a special order, you may determine the so-called actual cost of each unit produced, but this unit cost should still be compared with the standard. As a matter of fact, there may be manufacturing companies where orders are special all the way through, but I do not recall ever having seen one. There are always many common operations and common parts, and it is only in the finishing operations, or in the addition of certain attachments or special devices, that the product becomes special.

Standards for the Plant with Great Variety of Products

What of the plant that makes literally thousands of items, or the same items in many grades and sizes? In my opinion that offers the ideal situation for a plan of cost standards, as I shall explain later.

Under any circumstances, the problem of setting cost standards is the same. They should be based on carefully prepared specifications for material, and on time standards determined by time study. Values should be based on the best judgment available as to what is to be paid for the materials and the labor. There should be a fair allowance for shrinkage, scrap, spoiled work, and any of the other factors that are always occurring in any business, but care must be taken to see that in making these allowances, you do not set standards which are too easy of attainment.

I am sure I need not tell you how standards burden rates are set, or how they are based on a standard or normal volume of production. In this connection, however, I want to remind you that it is just as important to set standards of distribution for all

service departments, as it is for material, direct labor and direct burden.

When to Start

One question I am always asked is whether you must wait until all standards are set before putting a plan in effect, or whether you might start with such standards as you have, or with averages which you can largely establish from past records and refine as you go along. There are some who feel that it is a mistake to start until you have complete standards that are as accurate as they can be made, on the theory that the use of inaccurate standards even temporarily will tend to discredit the whole plan.

My own experience leads me to prefer the other way, and to feel that it is better to start with whatever you have, and refine as you go along, because in the process, everyone is getting education and experience.

How Much Refinement Is Desirable?

The next, and perhaps even more important, question is how much refinement we should have in setting the standards. Here you have two problems: setting operating standards, and setting standards to put through the books. Your time studies and analysis of material specifications will tell you how far you will go in setting the standards for operating control, but it usually is not necessary to go to that much refinement in setting the standards which go through the books.

For example, you may have several operations through which all products going through a particular department will have to pass. You will have operating standards for each operation as a basis of wage payment or for other purposes, but you may combine them into one standard for cost control. If there is a large variance in the department, a little investigation will tell you which operation is causing the trouble.

Standards for Group or Class Costs

In plants making a great many products and many varieties and sizes of the same product it would be an impossible and unnecessary task to put through the books standards for each opera-

tion on each size of each product. Here you have the problem in what is known as class or group costs. You include in a class or group, products of the same kind but of different sizes or varieties, and take an average of the standards of the different items in the group as the standard for the group. Here also an important variance in the group will lead to an investigation which will determine whether the cause of the variance is general or confined to one or two items.

It is my opinion that it is in a business of this kind, with so many products, and so many sizes and varieties of the same product, that cost standards tied in with the books prove to be of the greatest value. You do not attempt to cost each individual item, yet by using group or class standards, you do have control and know where operations are out of line.

What Kind of Variances Should Be Shown?

Next, what kind of variances are you going to show up? Here again judgment and experience will guide you, but I do want to urge you to start with as few controls as possible, letting experience and your investigations of major variances tell you where the standard controls need to be refined.

For materials, you will have price variance and usage variance. Usage variance may be further divided into quantity variance and the substitution of other kinds of material. You may want further details of scrap of various kinds and of spoiled or defective materials. I am not urging all of these refinements and they certainly are not all necessary at the start, but they indicate the possibilities for real control and for giving worthwhile information to operators of large plants where these conditions obtain.

With labor, if work is not strictly on a piece basis, you may have the usual labor rate variance which you may or may not attempt to allocate to products. There is also the time variance, and the variance due to using a higher paid employee on work calling for a lower wage.

I need not go into further detail on this question at this time. I want only to give you an idea of the many factors to be considered, factors which must be measured if they are to be controlled, and must be controlled if results are to be the best possible in a particular department or plant. No foreman or super-

intendent can carry these things in his head, and it is the cost accountant's task to help in the way I have suggested.

Making Statements More Interesting

Specifically, what can we do to make our cost data more valuable to the operating executives and, therefore, to our companies. That, after all, is what we are all aiming for. In the first place, I think most cost accountants can make their various reports to executives, and particularly foremen, more intelligible and interesting. I suppose all of you produce statements of departmental expense for your foremen and I imagine that those statements are usually set up in four columns. The first will be headed "Item," the second, "Actual Expenses," the third "Standard or Budget," and the fourth "Variances." May I offer the very simple suggestion that you head the first column, "These are the items for which you spend money" or something to that effect; head the second column, "This is the amount you spent"; the next column, "This is the amount you should have spent"; and then have two columns, one for which you have headed "On these items you show a loss," and the next column "On these items you made a profit."

If you will use similar reasoning on any statements which you prepare, particularly for people who are not trained accountants, I think you will be amazed at the added interest that will be created. You have all heard many illustrations, I am sure, of ways that have been found to arouse interest on the part of people whose attention you desire and on the part of people who should be interested in these matters and this is just another way of accomplishing that result.

Budgetary Control

Now I want to deal with standards in a somewhat broader sense than as a measure of material, labor and burden for particular products or operations. This leads to a discussion of budgets which is really a standard for the entire business.

So much has been said about budgets and so little understood, yet no enterprise can be conducted as successfully without a budget as it can be with one. To say that a business cannot be conducted without a budget is to say what is obviously untrue,

because many businesses are conducted without budgets, (and have been for many years) and have, nevertheless, made a profit.

The merit of budgetary control, however, is coming to be more generally realized, although there are still many who say, "You can budget a lot of businesses, but you can't budget ours," and "It is impossible to express our business in budgetary terms." But I find that many people who make such statements fail to understand what a budget is all about.

Kinds of Budgets

There are several kinds of budgets, and keep in mind that each one is a standard for the part of the business it covers. There is the treasury budget, which is a standard for the financing of the operations and which aims to tell what money must be provided for the expected operations of the business. Or, looking at it in another way, it is the document which enables the financial executive to tell those responsible for operations how much money is available.

Then there is the sales budget which attempts to reflect what the accomplishments will be over the period covered by the budget. It is here that the most noticeable difference exists between the functions of the various budgets, because a sales budget with no element of hope in it is a poor document. However, it is evident that if a project of sales which reflects hope and ambition for greater accomplishment is made the basis of a manufacturing schedule, the business is likely to have on its hands more inventory than is desirable.

It is important to remember that it is just as necessary to set up a standard for all items of selling expense, as it is to set up manufacturing cost standards, although I am afraid most of us are inclined to think that standards apply only to the factory. The manufacturing budget is, of course, based on cost standards.

Bringing the Budgets Together

In completing the budget picture, it is well to have in mind that although the sales and manufacturing budgets are based on fair cost standards, we may also know that neither the sales nor the manufacturing departments will obtain these standards

during the period which we are forecasting. There will be idle capacity, therefore unearned burden, as well as other variances.

Perhaps that statement will stand a little further explanation. We have a department which has a normal capacity of a thousand units. The sales department sets up what seems to be a reasonable budget which says they can sell nine hundred units. We know, therefore, that we will have unearned burden for the other hundred units, and if we are to have a true and complete picture, that must be budgeted.

Therefore, after we have a sales and manufacturing budget, we have the task of putting them together, making proper allowance for all variances. This might be called an administration budget, in which the judgment of the chief executives and those charged with setting up the budget is employed to present as nearly true a picture of what is going to happen as possible.

As a rule, budgets which look forward more than three or four months are unsatisfactory on account of the many variables which develop in the course of time. The best practice is to develop a budget for three or four months, making a new one each month, dropping one month and picking up another.

Accuracy of Budget Relatively Unimportant

Many of those who deprecate the use of a budget system are of the opinion that in order to be a success, a budget must accomplish approximate accuracy—in other words, the results must be very nearly in accordance with the prophecy. This is not the functioning of budgeting at all, and the accuracy of a budget is relatively unimportant. To my mind, a budget represents a standard, a measuring stick with which to measure the accomplishment of the various activities of the business. Of course, a budget must tie into the books. It must be prepared with the greatest care and with proper regard to detail.

A sales budget which reflects only the general hunch of the sales manager and is not based upon or checked to the forecast of each branch or salesman is of little value. Each salesman should be made to budget his own customers and show the expectancy of business to be realized from each. Does that seem like an impossible task? It may take a little time and a little educational

effort, but can you not see the possibilities of increased volume, emphasis on more profitable lines, and generally better results?

Budgeting Leads to Better Accomplishments

A salesman has fifty customers and he forecasts that he will sell them varying amounts of merchandise next month, or during the next budgeted period. When the end of the period comes, he finds that many of them have bought less than he expected. When he comes to analyze the results, he learns his own deficiencies in evaluating his customers and in presenting his merchandise. He finds that one of his customers failed, which shows him that he should not spend too much time on customers whose credit is doubtful. He finds that in other cases, neither he nor his customers have properly evaluated the economic conditions or the buying habits of the consumers in that district. In other words, the very fact that the salesman has to prepare a budget, makes him a much better salesman since he knows just where to direct his energies.

A similar line of reasoning is applicable to the manufacturing department. It must be able to manufacture the product at a cost within the limits of reasonable expectation. When the product is made or the operation finished, and the cost is higher than expected, inquiry may be made as to where the differences exist, and the department is thereby on the road to better accomplishment. To repeat, these budget figures should be something whereby each person in the organization can measure his per cent of accomplishment against a standard.

A few minutes ago I said that the accuracy of the total budget was relatively unimportant, and that is true. It is important, however, that fair standards be set up for each product or activity, so that you have a measure of the actual performance for any rate of activity or any volume level.

If we forecast sales of $1,000,000 for a certain period and approximately that volume is reached, we want to know whether all costs and expenses are approximately what was budgeted for that volume, or the reason for any wide variances. On the other hand, if sales were only $750,000, we want to know whether costs and expenses were approximately what they should have been for the lower volume.

Inventory Volume and Turnover Standards

I want to touch briefly on another and very important matter to which little or no attention is given when it comes to budgeting or setting standards. That is the setting of a standard of inventory volume and rate of turnover.

With intelligent sales forecasts and standards of manufacturing performance, it is possible so to plan the manufacturing as to keep an approximately even rate of production, which will produce inventories to take care of peak sales with the maximum rate of turnover.

That is usually a problem of following the records to see that the relative positions of orders received, shipments, productions and inventories, on which the forecast was established, is maintained, or that production is increased or decreased if orders are not keeping up or shipments are being delayed or advanced. It is all a matter of setting standards and matching the actual performance with them.

The same principles apply to the financial problems. We should budget or set standards for cash, accounts receivable, purchases and accounts payable; and let us not forget the importance of budgeting for capital expenditures.

We all know of tremendous losses which have been sustained through having surplus inventories when the market for the product took a sudden drop or a new product made the old line obsolete. Not all of that can be avoided, particularly in a period of sudden depression, but a well established plan of budgeting sales and inventories, as I have suggested, will certainly give you some warning of what is to come.

STANDARDS FOR MANUFACTURING EXPENSE

By H. J. Myers, Cost Accountant, United States Gypsum Company, Chicago, Ill.

MANUFACTURING expense, overhead or burden, sometimes all used interchangeably, may be defined as any expense consumed in the manufacture of the product without actually becoming a part of it.

Thus material which does not become a part of the finished goods and is not shipped out as a part of it or as its container, falls in the class of a manufacturing supply, maintenance supply, repair parts, etc.

Manufacturing expense also contains what is usually referred to as non-productive labor. This is a class of labor that contributes to the making of the product just as much as the so-called direct labor but which is applied indirectly and therefore hard to allocate as a direct charge to the product. In actual practice there are varying amounts of indirect labor in manufacturing expense, from none to almost half as much as direct labor, depending on the ingenuity used in finding ways of applying it to direct cost. Of course, the greater proportion of such expenses that can be treated as a direct cost the better because it facilitates a more direct measure of performance.

For practical purposes we will define manufacturing expense as any expense, material, labor or other service which is not a part of the material specifications and labor operations as shown on some form of a route sheet or list of standard operations for each part, sub-assembly or assembly.

The Objective of Standards for Manufacturing Expense

There are three main objectives of standards for manufacturing expense as follows:

1. Control
2. Basis of determining unit costs
3. Means of absorbing burden on an equitable basis.

The principal objective listed here is control, the other two are largely by-products. By control we mean the ability to determine

how effective has been the control over every item of controllable expense.

An Account Structure for Control

The basis for any system of expense control is a good sound account structure. Account structure involves three steps.

1. Accounts for the basic or natural expense classifications. (The National Retail Dry Goods Association recommends, and a large number of department stores are using, such a classification.)
2. Departmental numbers, when combined or used in connection with the basic expense numbers, give specific account numbers identifying both the expense and the department.
3. The department numbers must be laid out to fit the organization so that the responsibility can be placed and control obtained.

Some of the natural expenses by name follow:

Salaries and wages
Non-productive labor
Depreciation
Rent
Insurance
Taxes—real and personal property
Taxes—Social Security
Supplies
Repair and maintenance materials
Telephone and telegraph
Stationery and printing
Postage
Electric power
Dues and donations
Outside services

Some of the natural departments follow:

Non-Productive or Service Departments:

Office
Boiler Room (heat, or power)
Maintenance

Receiving and stores
Janitor and watch service
Tools and pattern shop
General factory

A Few Productive Departments:

Machine department
Sub-assembly
Main Assembly (Including packing)

The departments used should be the same ones that are recognized in the organization of the business and should be headed by some minor or major executive. In other words, there should be expense allocated for each unit of responsibility. In fact, if an organization chart exists, it is a good thing to get a copy of it, plan the account numbers to fit the chart and fill them in right on the chart.

Budgets and Standards—The Difference

The name budgets and standards are sometimes used as if they were the same thing. This is erroneous. Budgets are not necessarily standards although budgeted overhead may also be the standard overhead. Budgets are usually made up from basic standards because a budget will be more effective when built up from the basic standards themselves.

Standards are the parts that make up the whole. The whole is the budget.

Budgets in General and the Flexible Budget

Usually the word budget brings to mind an allowance of a fixed amount to be spent for a definite purpose and this is its meaning when applied to governmental or municipal budgets. It is an appropriation of a definite amount for a definite purpose and when the amount appropriated is used up no more can be spent, just as no more checks will be honored when a deposit account in a bank has been checked out until a new deposit (new appropriation) has been made. It is from this kind of budgeting that the word budget comes. However this is not the kind of budgeting that can be used in a business, although it was the kind at-

tempted in early applications. It can be used for control over certain functions of a business such as advertising appropriations and capital expenditures.

A budget of expected results for a coming period is really a forecast of what can be expected. The results expected, however, can only be realized when coupled with a lot of "ifs." Results are contingent upon such factors as the following:

1. The same sales volume must be obtained as forecasted.
2. The same prices must be secured.
3. The same proportion of each line of merchandise must be sold, unless they all carry the same margin.
4. The same volume must be manufactured.
5. The same prices must be paid for the raw materials and labor.
6. And last but not least, all costs, material quantities, spoilage, labor effectiveness, manufacturing expense, selling and administrative expense must be perfectly controlled.

Because of the impossibility of perfectly controlling all the foregoing factors, it is not possible to use the original budget idea in a business without some different application. It became apparent that there had to be different budgets to fit different volumes of business. Such attempts have been and are being made but here again the amount of work involved is great because there would have to be many budgets prepared in advance so as to have one to select from for any volume that might occur.

More recent developments have been along the lines of some form of a flexible budget, the flexible part applying to all variable or controllable factors.

What is a flexible budget for manufacturing expense? The word flexible implies that it is easily adjustable. This doesn't necessarily involve changes in the basic standards but rather in the volume of manufacture because volume can fluctuate from nothing in some months to from 30 to 50 per cent of the entire year's volume in other months. Of course this is an exaggerated case but volumes do fluctuate considerably and a budget must be based on standards so that even this exaggerated condition just mentioned will not cause any more trouble than a variation of but 2 or 3 per cent in the volume from one month to the next.

Major Divisions of Expense

All expense, but especially manufacturing expense, may be divided into two major classes, fixed expense and variable expense. Sometimes there is a third division claimed, namely semi-fixed. However, this semi-fixed group of expense can be separated into the major divisions of fixed expense and variable expense. This then lends itself more readily to forecasting, budgeting, etc., and gives more positive control over expense. In fact, unless this is done, attempts at forecasting the semi-variable expense is not very satisfactory, nor is the control satisfactory because too much is dependent upon arbitrary decisions.

Just What Is Fixed Expense?

To many, even the fairly well informed, fixed expense means but a few items of expense, namely: rent, depreciation or depletion, taxes, insurance (fire insurance) and salaries.

There is little doubt about the foregoing being fixed generally, although in some industries depreciation as well as depletion is taken into costs on the basis of use rather than time or some of the other more popular methods. However, there are items, such as those just referred to, which there would be little difficulty in almost anyone agreeing on. But beyond those items, in the semi-fixed group, just how can we determine the part that is fixed and the part which is variable. Before we go further let us try to define fixed expense. The best definition I have been able to coin is this: Fixed expense is the irreducible minimum beyond which you cannot go without impairing the organization.

No fixed expense is entirely fixed. By executive action, a fixed expense can be materially increased or decreased. It can be reduced to a point where there would be no organization left and the plant would be closed. Even during a period of depression, such as we have just been through, it is doubtful if such action would be wise because a business expects to continue and should be prepared to do so. After all, we are considering a going business, and therefore I like to think of fixed expense as the minimum that will maintain an organization, ready to do business, even though it may be shut down temporarily.

The difficulty with this sort of a definition is that it still leaves the matter of determining the amounts to personal opinion as to

just what the minimum is. It defines a fixed expense but does not tell how to determine the amount. If six different individuals were asked to arrive at the amounts they considered fixed, even after giving them our definition as a guide, we would no doubt get six different answers. Therefore it seems that we should find some other way to do this.

Our approach to the problem will be somewhat as follows. We reason that if we take the lowest month's production and the expense for that lowest production, and compare it with the average or with any other month's expense and production which is higher, the increase in expense must have been due to the increase in production. Having arrived at this conclusion, we then can calculate what the fixed amounts are for our semi-fixed group of expense provided we have a common unit of measure, and if we have nothing else, we can usually use direct labor. If we have standard hours or standard labor it will be better. For purposes of illustration we will use standard direct labor as the unit of measure for production.

Let us assume we have the following figures for the lowest month and the average month.

	Low month	Average	Increase	Variable Rate
Standard labor	$10,000	$14,000	$4,000	
Any semi-fixed expense.....	1,100	1,300	200	.05

Now our semi-fixed expense for the lowest month contains some fixed and some variable expense so we must eliminate the variable amount and the remainder will then be fixed expense. To do this we multiply the standard labor for the lowest month by the variable rate. This gives us $500 which we deduct from the $1,100 leaving $600 as the fixed expense. This is done for each one of the semi-fixed expense items in the group.

$$\$10{,}000 \times .05 = \$500$$
$$\$1{,}100 - \$500 = \$600$$
$$\$600 = \text{fixed expense}$$

Direct Labor as a Unit of Measure

There are various units of measure used by different industries and companies. Some of the best known are actual direct labor, standard direct labor, man hours, machine hours, combina-

tion of man and machine hours, tons, square feet, pounds of steam, kilowatt hours, etc. The most generally used is direct labor, actual or standard, probably because labor is the simplest and easiest to use, and after all it is fairly representative of the manufacturing effort required. If standard cost accounting is in use, standard labor gives practically the same results as standard man hours or standard machine hours because standard labor is based on standard hours and the ratio of standard man hours to standard machine hours holds true. For our purpose we will use the standard labor as our unit of measure in illustrations presented herein.

Now that we have arrived at our method and decided on what unit of measure to use, let us consider the actual setting of standards for manufacturing expense.

Setting the Standards

If the company has past records to go by, they can be used. What might be considered a normal year may be selected, or several years may be taken to get a better average. If more than one year is used, however, it must first be determined whether there have been any changes in manufacturing methods or equipment during the period selected which would affect any of the variable expense. If more than one year is used, select a low year and a high year and consider the increase in expense to be caused from the increase in volume. If only one year is used, select the low month and compare it with the average for the year.

Our first step will be to secure a statement of expense for each of the operating departments, non-productive or service departments as well as the productive departments. These statements should show the low month and the average or high month. This information will be taken from past records of course. We will next proceed to classify all the expenses that are known to be 100 per cent fixed and 100 per cent variable. After we have done this, there usually will be left only six or eight items which are semi-fixed and on which we will have to do a little more work. Let me point out here that the same items are not always fixed expenses in all departments, or variable expenses in all departments. Some non-productive labor may be variable in productive departments while in service departments it will be fixed.

To properly do all this requires a work sheet. The sheet on which we list the expenses for the department can be used for the entire work sheet if we provide enough columns and head them up properly. We probably will head up a sheet as follows:

One sheet for each department and one control sheet for plant

			A	B	C	D	E	F	G
			Low month	Aver. month	Inc.	Var. Rate	Var. Am't in A *(3C/1C)	Fixed Am't A-E =F	Dept. Var. Rate (3C/2C) *(3B/2B)
			Semi-fixed items formula						
			100% Variable items formula						
1.	Std. Labor—plant total...		$10,000	15,000	5,000				
2.	Std. Labor—this dept....		5,000	7,500	2,500				
3.	*Expense items*	Class							
	Salaries and Wages	F	$1,000	$1,000				$1,000	
	Non-Prod. Labor ..	SF	800	1,000	200	.04	400	400	.08
	Depreciation	F	1,000	1,000				1,000	
	Taxes	F	950	950				950	
	M'f'g. Supplies, Etc.	V	1,000	1,500		.10			.20
4.	Totals		$4,750	$5,450	$200	.14	$400	$3,350	.28

*Numbers refer to line numbers on left. Letters refer to column letters at top. 3C/1C = expense items in group 3, which are extended in column C divided by the amount on line 1, in column C, as follows:

$$\frac{\$200}{\$5,000} = .04$$

The burden rates to be used for absorbing burden and for determining unit costs are arrived at as follows:

Variable rate from column D.	.14
Fixed rate (4F/1B)	.223
Total rate	.363 or 36.3% of direct labor.

Note—When the variable amount shown in column E is so high that it equals or exceeds the amount in column A, consider the entire amount of this item of expense as 100 per cent variable and figure the variable rate the same as other items set out as 100 per cent variable, that is, by dividing the amount of the expense shown in column B by the standard labor in column B.

There should be a separate sheet as illustrated prepared for each department and one control sheet for the totals of all departments in the plant.

All fixed items should be carefully gone over with each department head to determine what change, increase or decrease, may be anticipated. Even the variable items should be discussed to determine whether any changes in methods are being considered which may increase or decrease the variable expense requirements,

especially manufacturing supplies. Discuss them in terms of percentage of increase or decrease rather than amounts in dollars, if possible.

There should be a variable rate for both the department and the company or plant shown for each productive department. That is, the departmental rate is the variable amounts divided by the departmental standard labor. This gives a higher rate for the department because the same amount of expense is divided by a smaller amount of direct labor. Assume the company total labor is $10,000 and that for the department is only $1,000, the rate for the department will be ten times the company rate. However, the total allowable amount is the same either way. The reason for this is that the foreman knows approximately how much his labor is each day and he can determine approximately how much he is entitled to spend for variable expense by extending his daily labor by the variable rate for his department.

Of course all non-productive departments can only be measured by the company total standard labor because they serve all departments and they have no direct labor of their own.

When all the items of expense have been discussed with each department head and substantial agreement reached, fixed amounts by items and variable rates by items are shown for each department, and each sheet is totalled so that each department shows total fixed amount and total variable rate. Then they are all added, item by item, and shown on a total or control sheet for the plant.

The control sheet should then be totalled, and the totals of fixed expense and variable rates should balance. A rate for the fixed expense is determined by dividing the fixed amount by the standard for the coming year. The fixed rate plus the variable rate gives the total standard burden rate which will be used throughout the year for absorbing expense, for determining burden variations and for computing standard unit costs. Once the variable rates have been established in this manner, and a few minor adjustments made from the experience of a year or two, these variable rates will become just as definite a basic standard as basic standard time allowances or basic material specifications, and they will not have to be changed again until there is some major change in methods or in the organization. However, the fixed rate may

have to be changed from year to year, even though the fixed amount does not change. The reason for this is because of different forecasted volumes. The fixed rate is dependent entirely upon the volume anticipated, and by the same token, when the fixed burden rate changes, the total burden rate changes proportionately. This necessitates the recomputation of standard burden in the unit costs.

Where no Past Experience as a Guide

If there is no past experience to use as a guide, as frequently happens when a new plant is opened up, a different procedure is called for.

The first step is to set up work sheets for each item of expense that you are likely to have. Use the natural classifications as a guide, and then go over the organization setup and the personnel required. From this, by listing the positions and what is being paid or is to be paid for each position, a salary amount can be determined and the distribution to the various departments shown at the bottom of the sheet.

Then take the work sheets for each item and discuss them with each department head, or anyone who has any knowledge of the contemplated operations and list items and amounts on each sheet by departments. When this has been done with all the items, they can be totalled and transferred to the same kind of work sheets just discussed and illustrated. Of course the determination of the fixed amounts for some of the semi-fixed expense must necessarily be arbitrary for the first time, but if good judgment is used and the definition of fixed expense given earlier is used as a guide, it will be found that expense standards will be surprisingly accurate.

Using the Standards to Control

The first step in control is to give each department head a copy of the basic standards which apply to his department so that he will know the standards by which he is to be judged. The real use of the standards for him is to help him control his expenses day by day as they are incurred.

The next step is a check-up. The check-up is the monthly expense analysis. Each foreman should be given a statement each

month which shows his actual expense compared with his budgeted or allowable expense.

These statements are made up by getting the actual standard labor for the month and multiplying the variable rates, item by item, by the standard labor. The result is the variable amount allowed for the month's production. To the variable amount is added the fixed amount so that the foreman is allowed the total fixed amount regardless of how small his production is and as far as he is concerned he doesn't have to consider volume in his comparison of his actual expense with that of the budget. In this way the head of each department is held responsible only for the variable expense over which he can exercise a large degree of control. He has no control over volume manufactured, and therefore should not be blamed for high overhead expense if it is volume which is to blame. Volume variation is nothing but under- or over-absorbed fixed expense.

The works manager should get a complete set of expense statements, including one showing totals. On the total sheet the expense variation should be analyzed into the amount that is due to lack of expense control (his responsibility) and the amount due to a variation in volume. While the works manager has little or no control over volume, and this variation is not his responsibility, it is necessary that it be shown to account for the total variation between actual expense and standard expense absorbed into the inventory at the standard rate.

There are two ways that standard burden allowances can be made up each month. One way is to use the total standard labor for the entire plant and the variable rates for each department based on the plant total labor. If this is done, the plant total can be made up first and the detail later, and there will be no difficulty in balancing the detail. By this method it is possible to make closing entries before the departmental statements are completed.

The other way is to figure the allowances for the individual departments based on their individual standard labor, but by doing this the total allowance for the plant cannot be determined until the detail is completed and totalled. Even when this is done there will be a variation due to unbalanced production as between various departments. Seldom will all departments be producing in ex-

actly the same proportion to the total as the proportions that were used when the rates were established. If this method is followed, an account to carry this variation due to unbalanced production should be provided. This account should approximately balance out over the period of a year.

Satisfactory expense standards, and their use for measurement and control over expense, have not reached the same degree of definiteness as the establishment of standards for material and labor. The methods just described, it is believed, represent progress in that direction.

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